



NEXEN Ecosystem Foundation Introduction

Lucille Mayer




Chief Information Officer, Client Experience Delivery

August 24, 2016

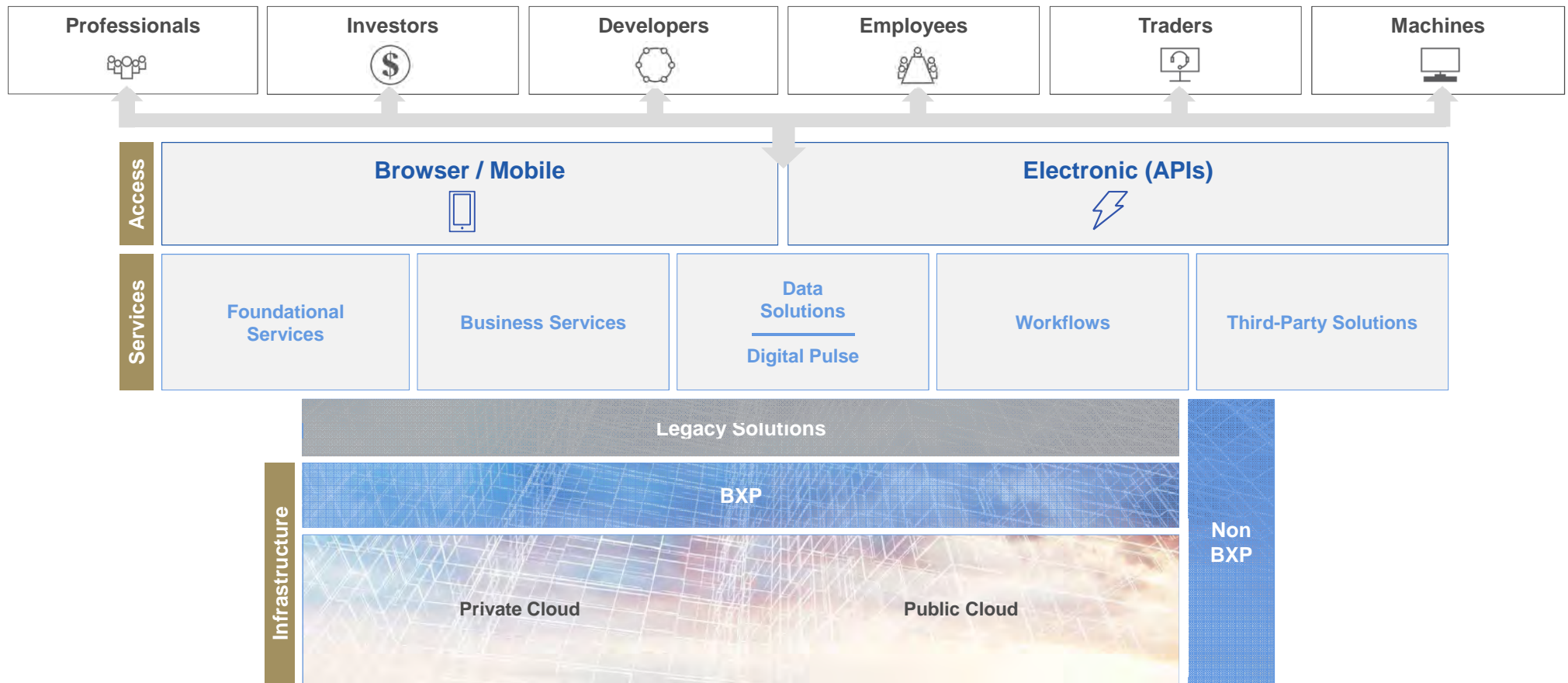


BNY MELLON

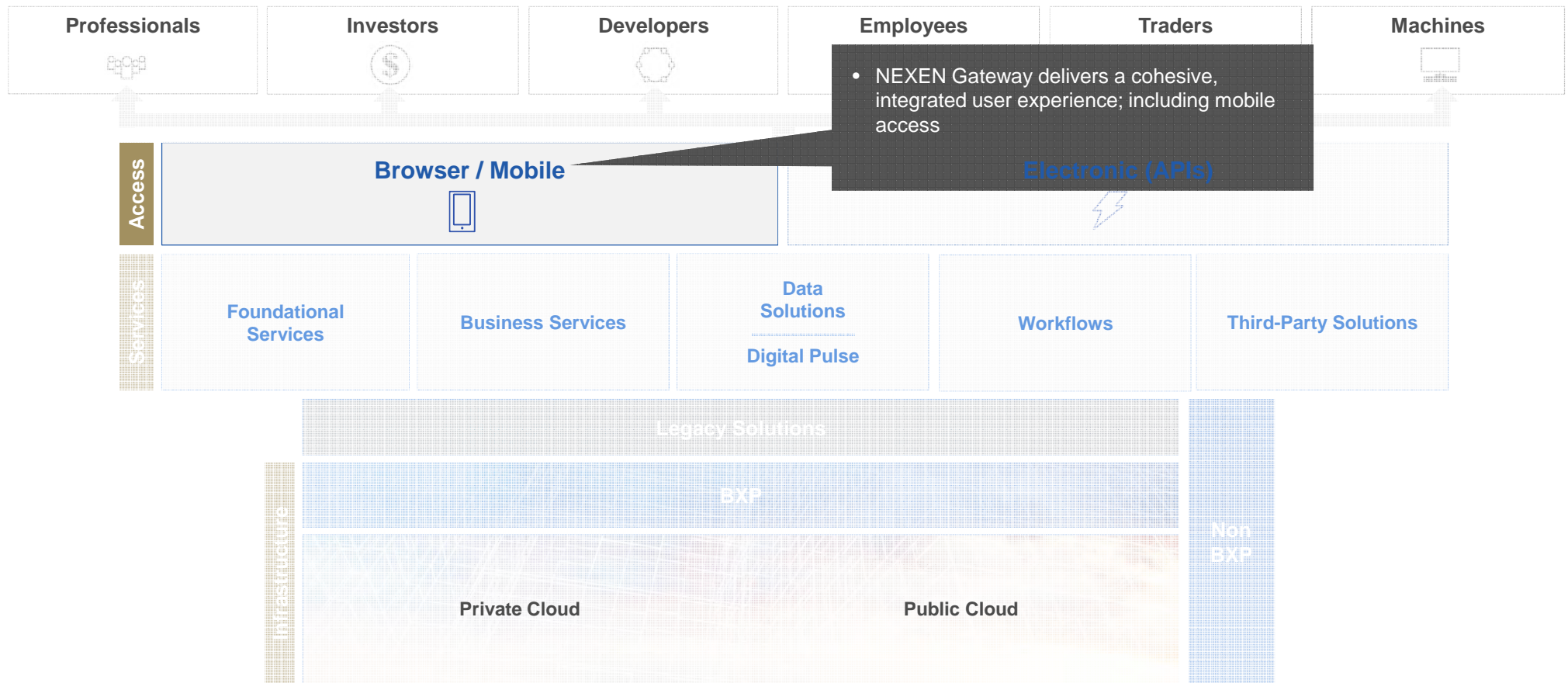
The NEXEN Benefits to be Demonstrated Today

BENEFITS	PRESENTATIONS	DEMONSTRATIONS
 <p>FOUNDATION</p>	<p>NEXEN Ecosystem: Foundation Introduction</p>	<ul style="list-style-type: none"> • Gateway • Digital Pulse • Application Programming Interface (API) Store • BNY Mellon eXtreme Platform (BXP) / Cloud Technology
 <p>BUSINESS SOLUTIONS</p>	<p>Building Innovative Business Solutions Using NEXEN</p>	<ul style="list-style-type: none"> • Enterprise Risk Integration • Client Onboarding • Trade Capture Analytics
 <p>COLLABORATION</p>	<p>Leveraging NEXEN Building Blocks to Create Revenue – Generating Solutions</p>	<ul style="list-style-type: none"> • App Store (Heckyl) • Distributed Ledger • BDS 360 (Broker-Dealer Services)
 <p>RESEARCH AND DEVELOPMENT</p>		<ul style="list-style-type: none"> • Node-RED Business Productivity • Robotic Process Automation

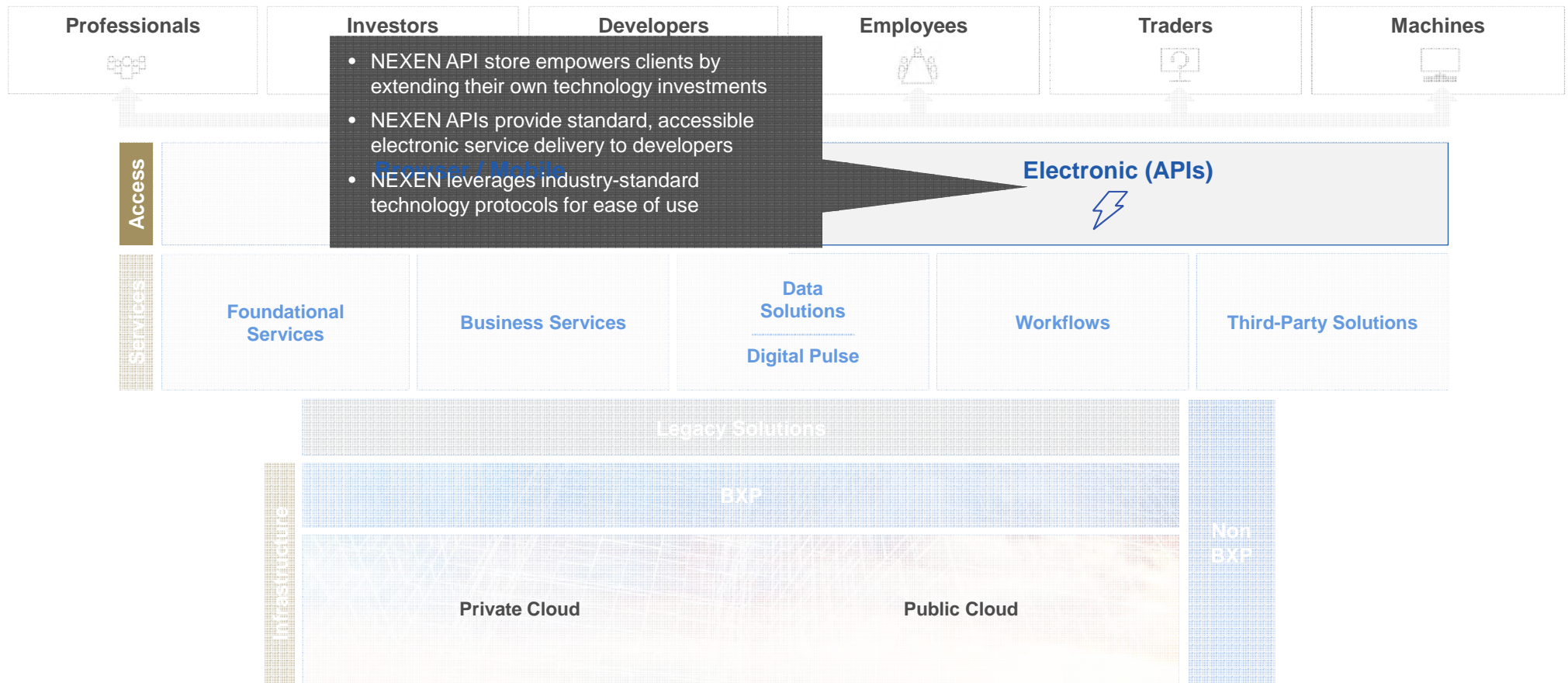
Servicing Multiple Needs Through Common Components



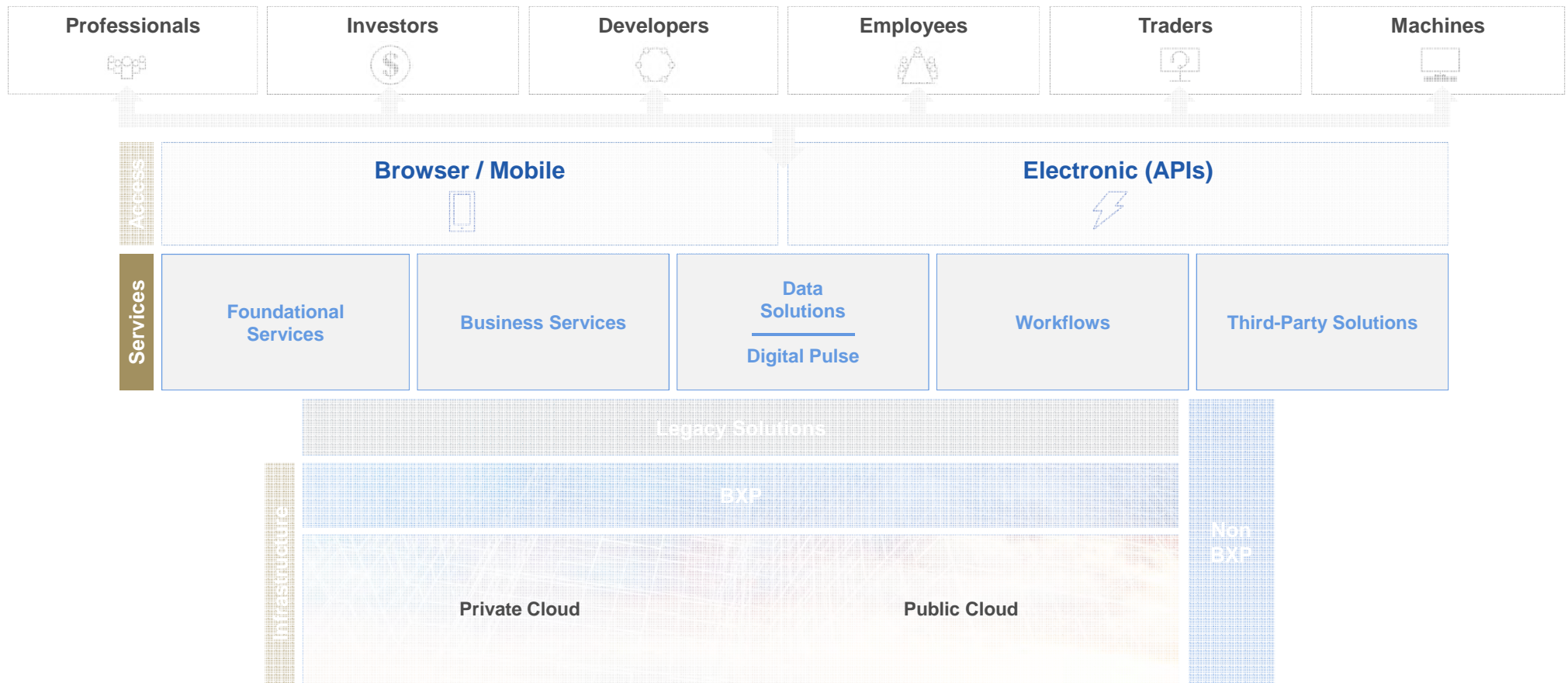
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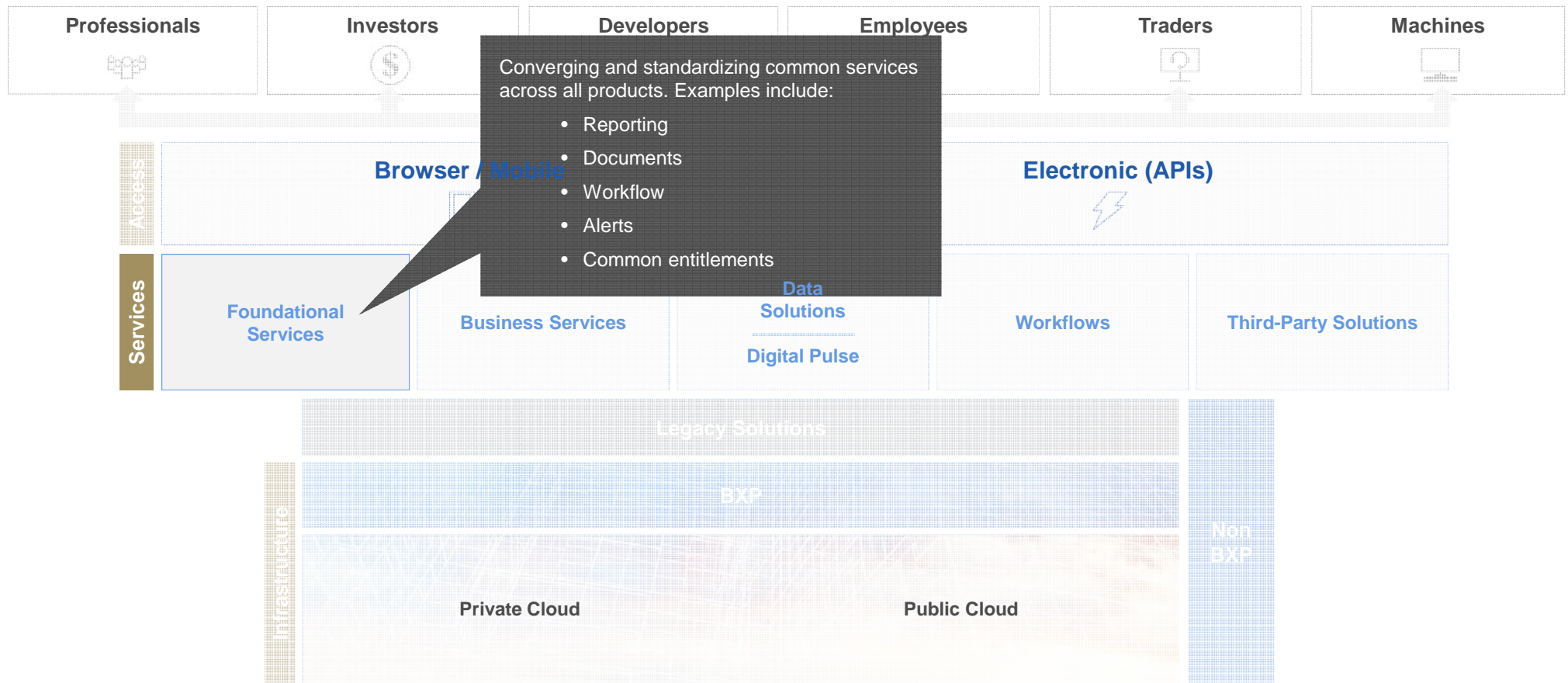
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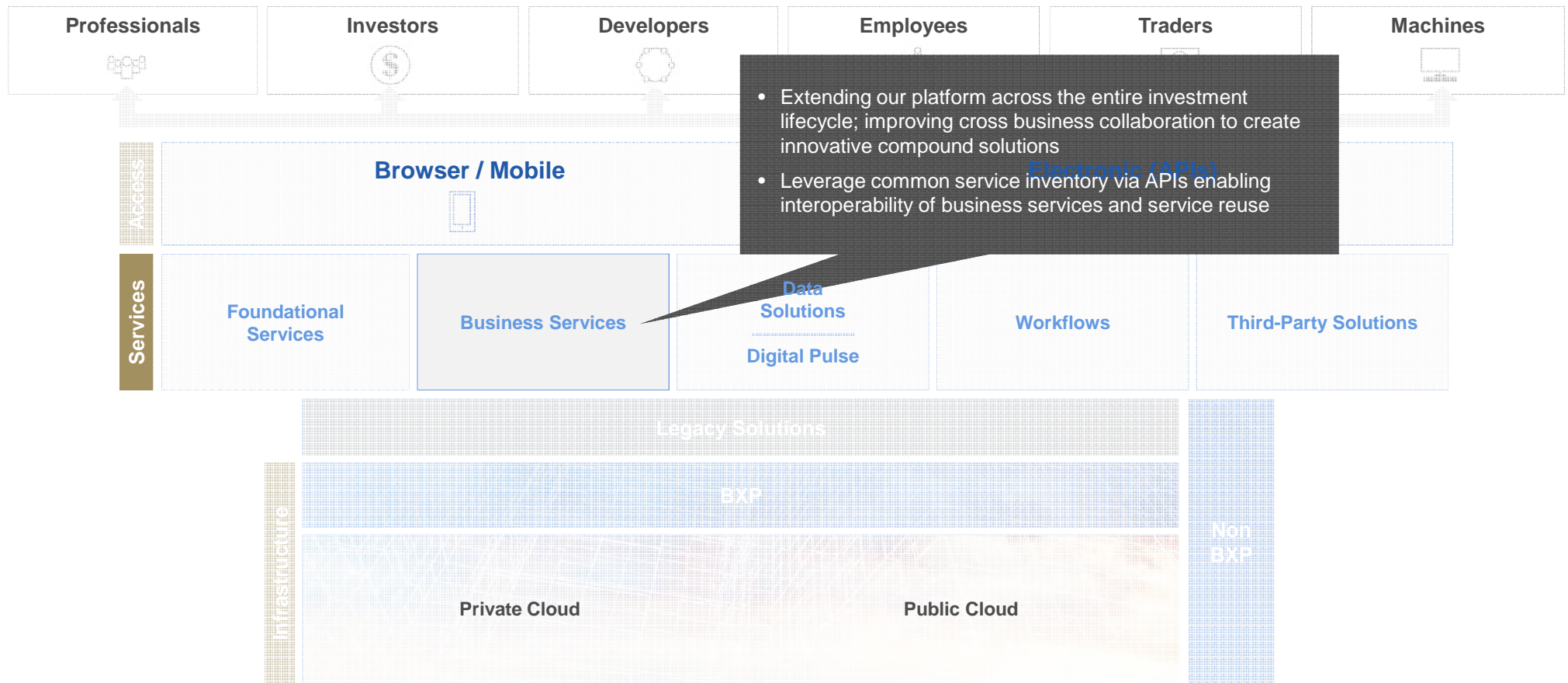
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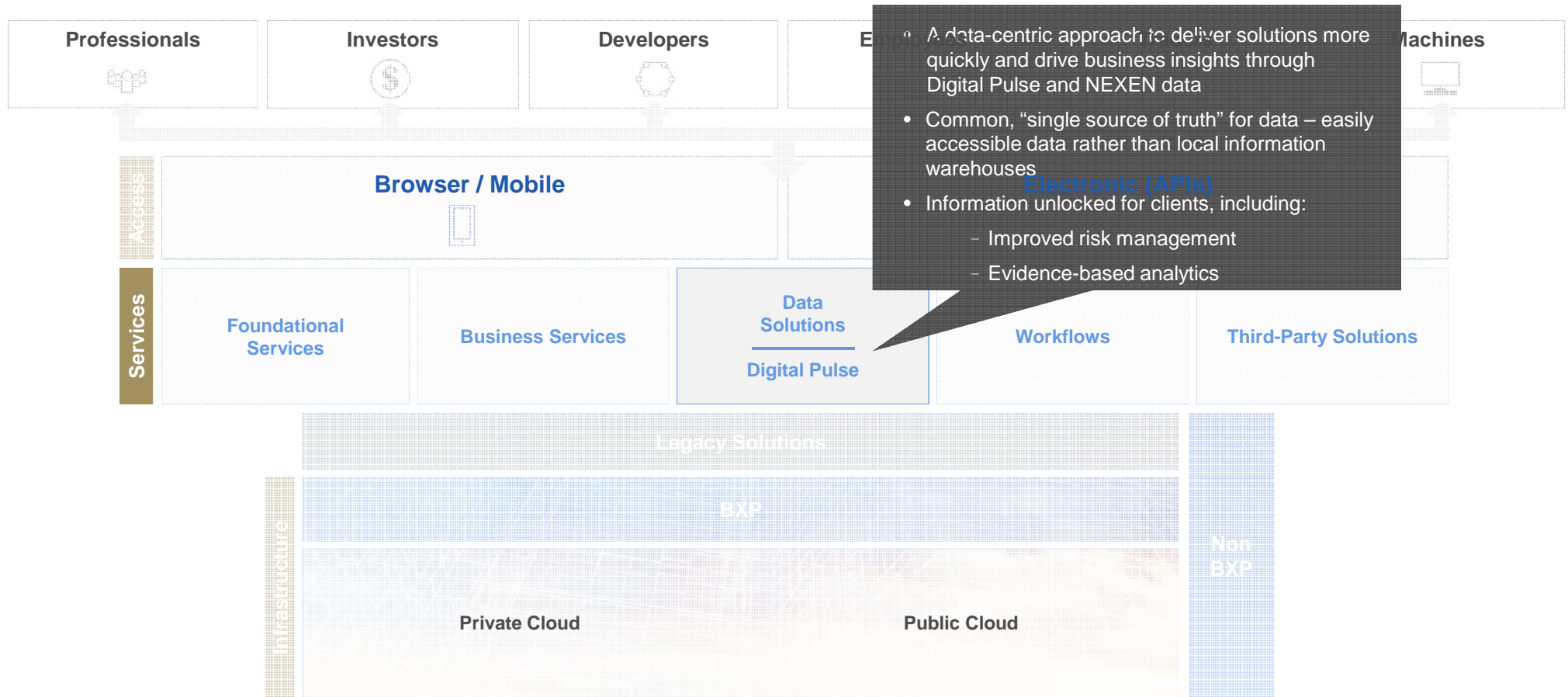
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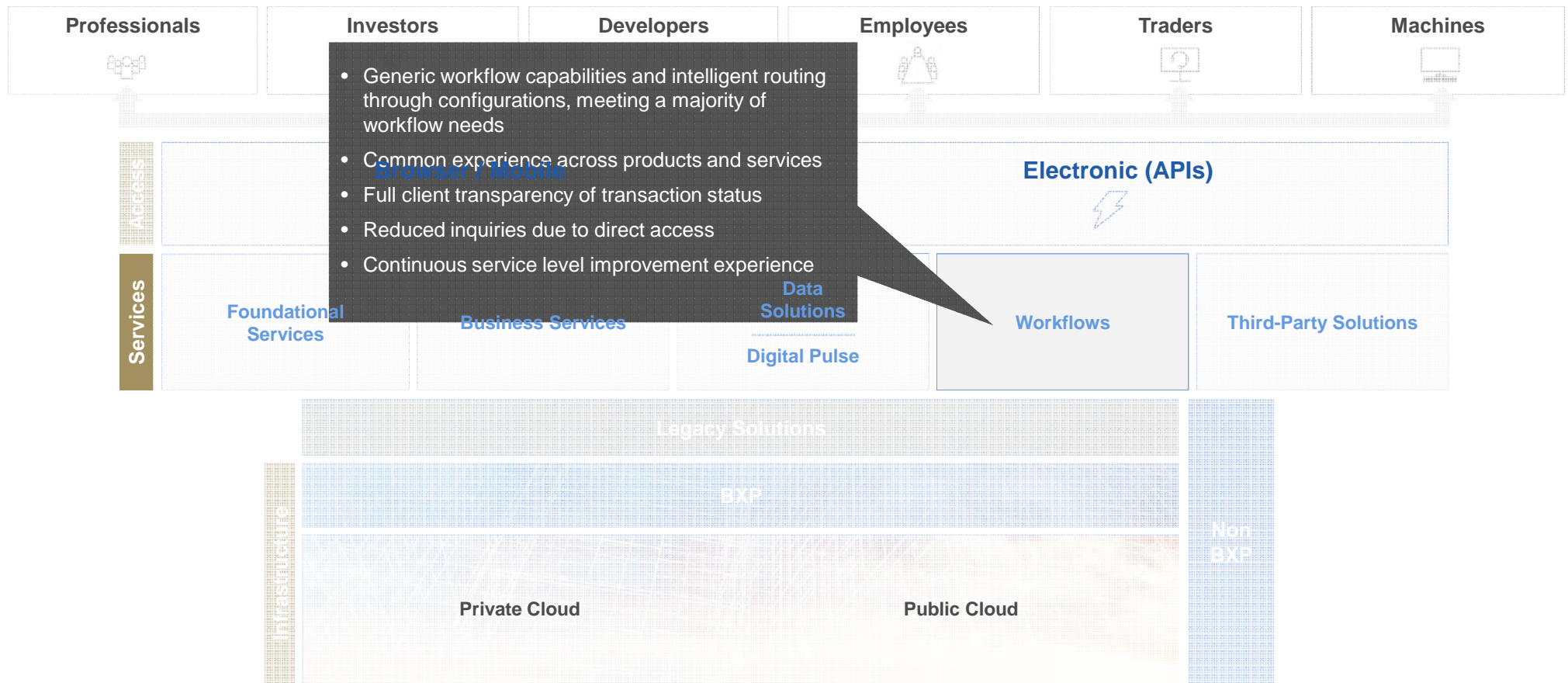
Servicing Multiple Needs Through Common Components



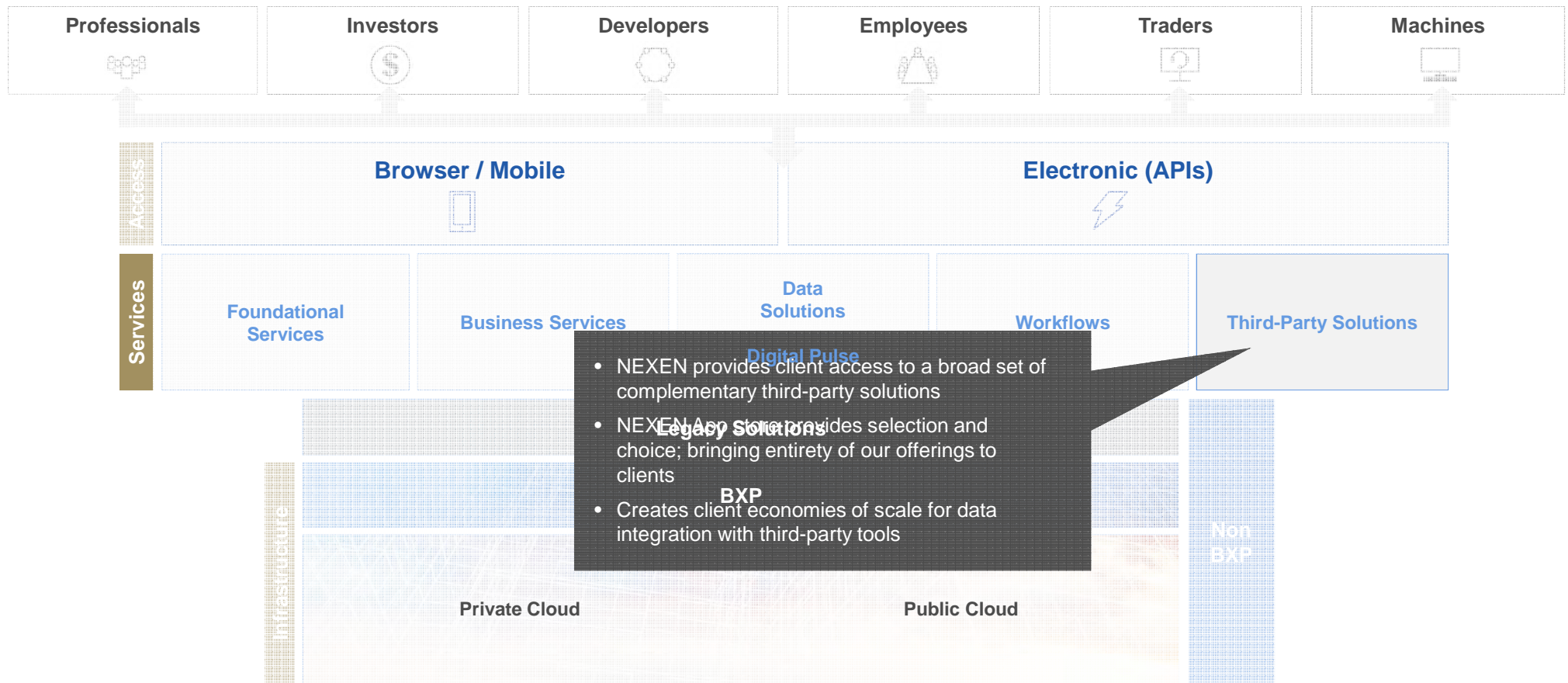
Servicing Multiple Needs Through Common Components



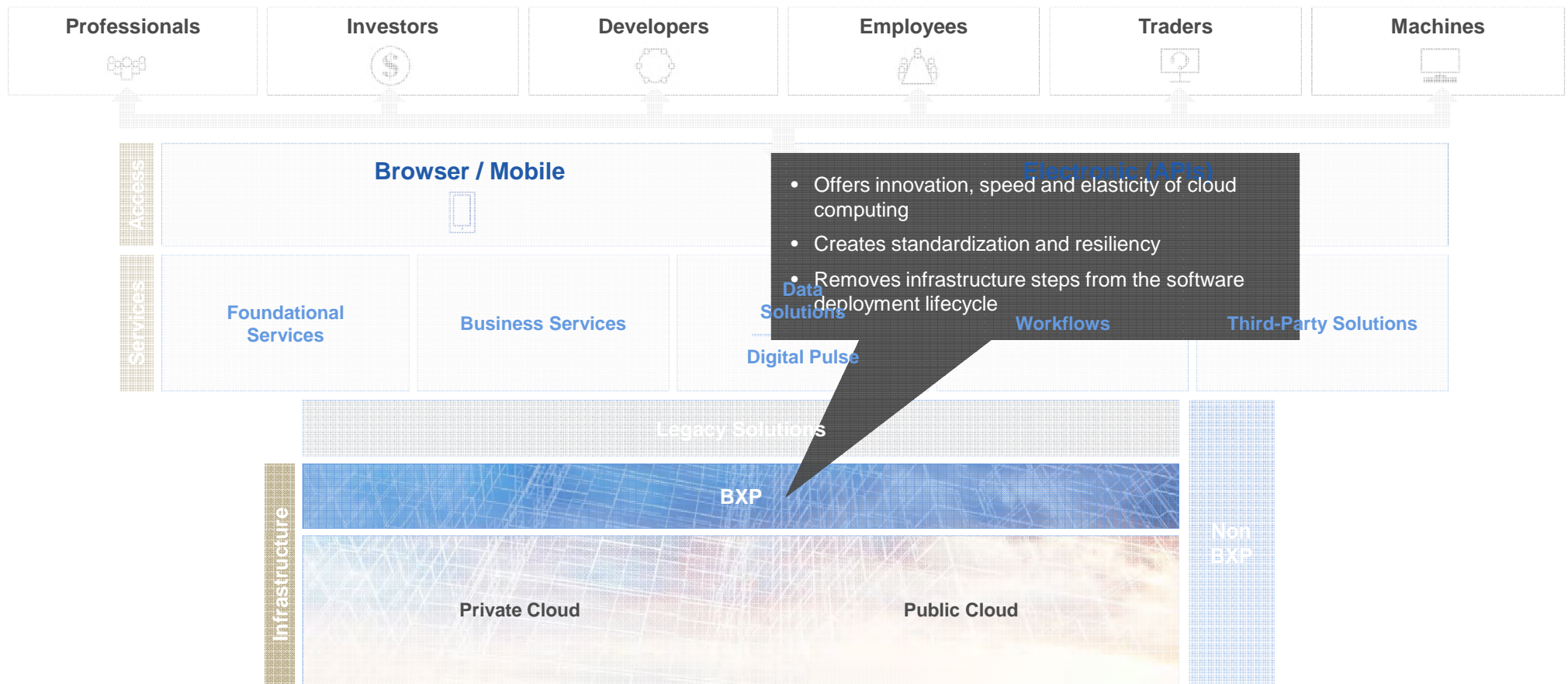
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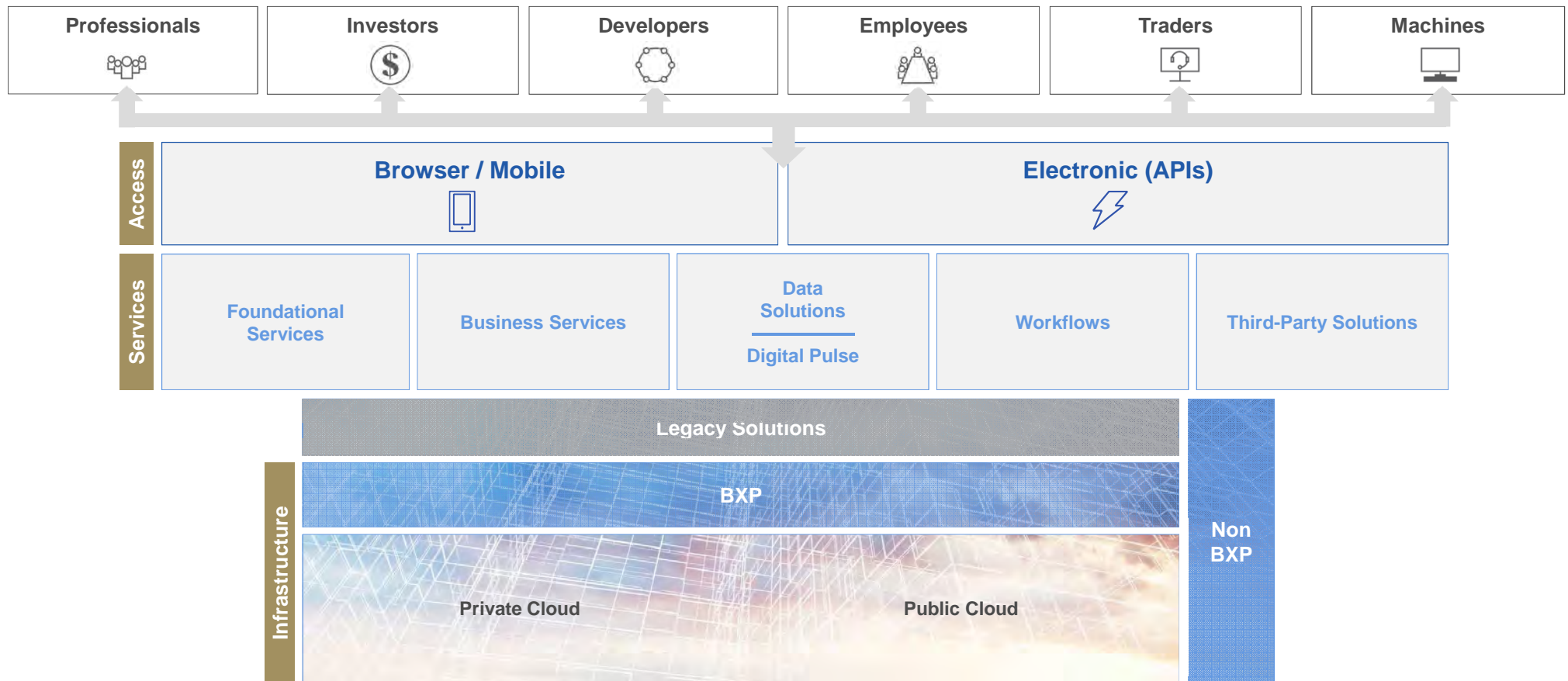
Servicing Multiple Needs Through Common Components



Servicing Multiple Needs Through Common Components



Servicing Multiple Needs Through Common Components



Our NEXEN Gateway to a Transformed Client Experience

Milestones

12K+

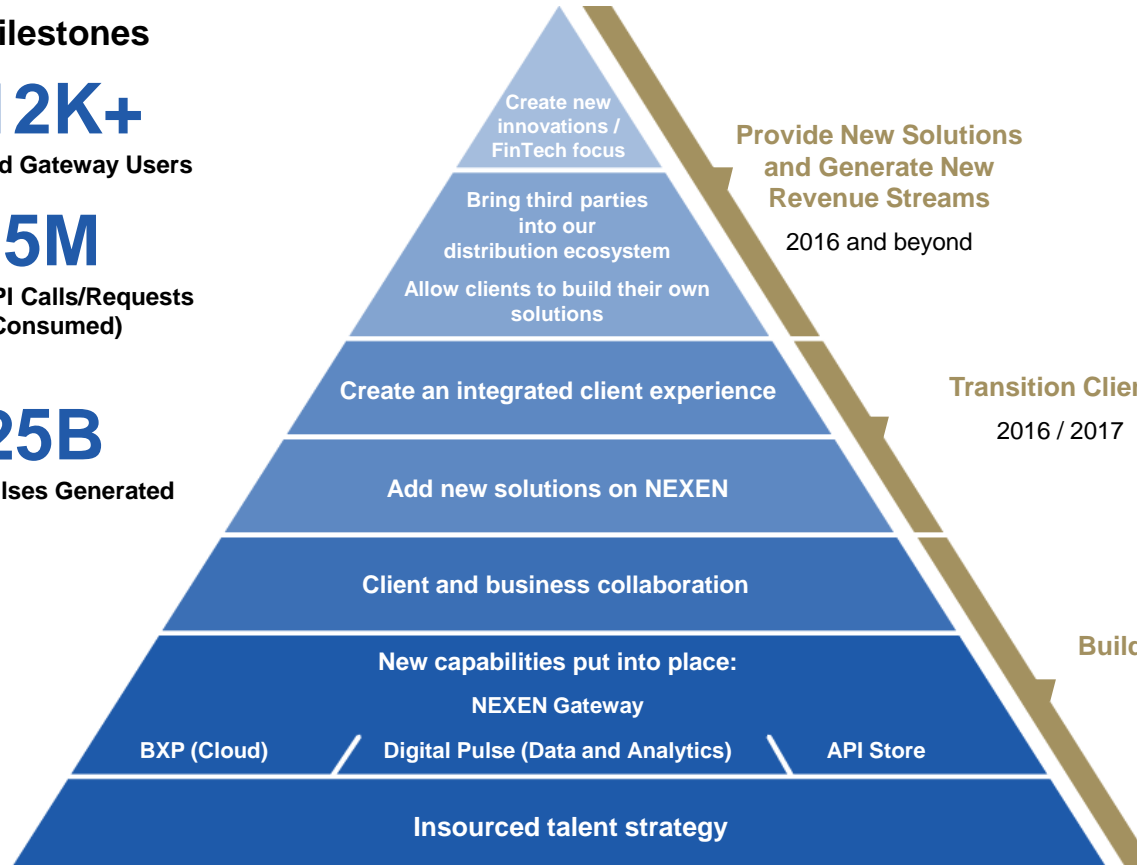
Entitled Gateway Users

5M

Total API Calls/Requests
(Consumed)

25B

Total Pulses Generated



**Provide New Solutions
and Generate New
Revenue Streams**

2016 and beyond

Transition Clients

2016 / 2017

Build the Foundation

2015

Key Benefits to Clients

- Deliver one digital ecosystem experience
- Provide faster speed to market for existing and new applications
- Enable greater ease of use
- Increase productivity
- Achieve cost savings



NEXEN Gateway – Single Portal to Access BNY Mellon Services

Neil DiCicco

Technology Product Manager

August 24, 2016



BNY MELLON

NEXEN Gateway



BUSINESS LEADER

Neil DiCicco
NEXEN Gateway
Product Manager

TECHNOLOGIST

Michael Pettenato
NEXEN Gateway
Development Manager



BUSINESS CHALLENGE TO SOLVE

- Clients access BNY Mellon's solutions via different portals, organized by line of business, resulting in inefficiency, inconsistent service levels and redundant functionality



TECHNOLOGY SOLUTION

- Developed a single portal to access BNY Mellon solutions delivering a consistent client experience regardless of product, service or region



NEXEN BUILDING BLOCK COMPONENT(S)

- BXP; API Store; Digital Pulse; Gateway

BENEFITS

Efficiency	✓
Cost Savings	✓
Resiliency	✓
Risk Reduction	✓
Revenue Generation Opportunity	✓

Client

- Delivers BNY Mellon services, third-party and client solutions in a single, integrated portal rather than a wide array of systems
- Consistent client experience regardless of product, service or region
- Business solutions, capabilities and data across all access devices (mobile)
- Client reporting consistency across lines of business

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- Increased efficiency enables relationship managers to spend more time providing value-added insights
- Scalable solutions leveraged across lines of business reduces redundancy, lowers costs and improves cross business collaboration
- Increased developer productivity; deliver solutions faster
- Changes the development culture to be agile



NEXEN Digital Pulse – Big Data Analytics and Insights

Gerald Verrilli

Big Data Architect

August 24, 2016



BNY MELLON

Digital Pulse – Big Data Analytics and Insights



TECHNOLOGIST

Gerald Verrilli
Big Data Architect



BUSINESS CHALLENGE TO SOLVE

- Establish a centralized production platform to capture, store, analyze and drive actionable insights on large amounts of data from disparate business data sources



TECHNOLOGY SOLUTION

- Developed a cost-effective, real-time Big Data analytics and visualization solution that is reusable across a multitude of business cases
- Enables rapid collection of new data streams with standardized capture APIs and provides self-service analytics for business teams



NEXEN BUILDING BLOCK COMPONENT(S)

- BXP; API store; Digital Pulse; Gateway

BENEFITS

Efficiency	✓
Cost Savings	✓
Resiliency	✓
Risk Reduction	✓
Revenue Generation Opportunity	✓

Client

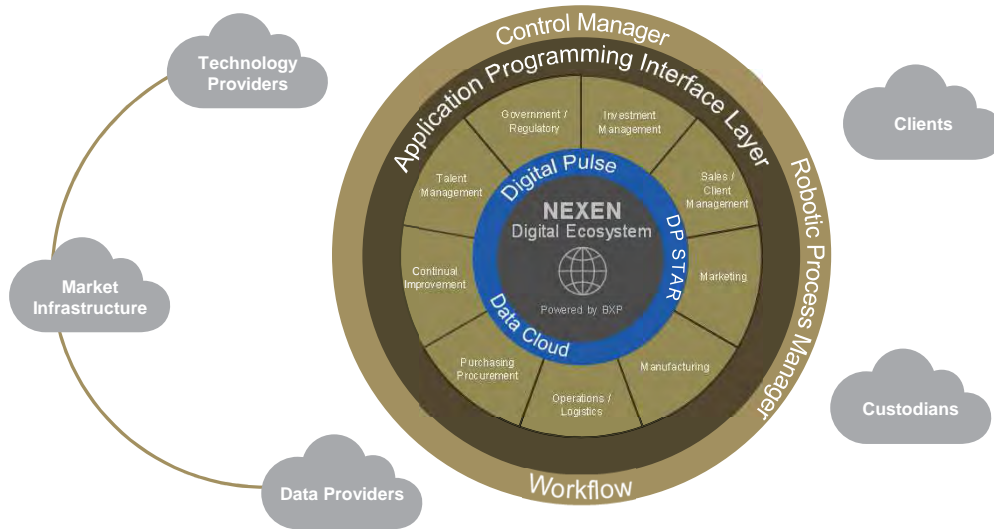
- Provides insights that create value and improve decision-making
- Single source of the truth
- Allows massive amounts of information to be organized and visualized in a consistent manner
- Creates metrics targeted to improve client service quality and behavior

BNY Mellon

- Drives process improvement, waste elimination, and unit cost reduction
- Supports evidence-based management culture
 - Enables monitoring and measurement to increase performance improvement opportunities

NEXEN Digital Ecosystem

A Foundation for Clients and the Industry to Build Upon



Digital Pulse

Digital Pulse is the component of the NEXEN ecosystem that has digitized BNY Mellon enabling us to “work smarter” and deliver analytical capabilities across a vast range of themes and businesses to drive measureable improvements

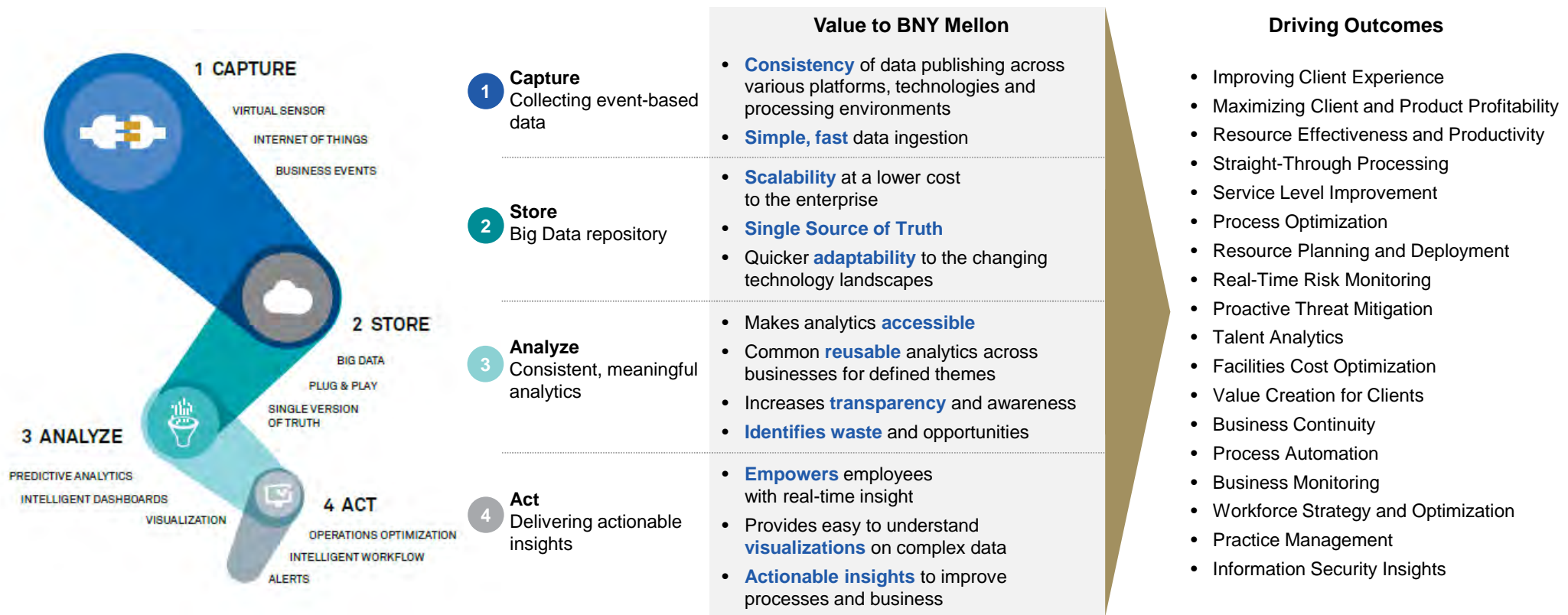
At its core, Digital Pulse is our internally-developed, real-time Big Data analytics and visualization platform

Enables business leaders to discover and deliver actionable insights that improve business performance through evidence-based management

NEXEN Digital Pulse - An Evidence-Based Ecosystem

Transforming Our Business and Culture

Digital Pulse is comprised of four core pillars that combined deliver a data immersive experience



NEXEN Digital Pulse Delivers Transparency Through Data Analytics and Insights



FAST DATA CAPTURE

Standardized payload structures and wide range of interface protocols facilitate data capture from disparate sources

Capture data from 106 business processes
Onboarding another 105 applications



EFFICIENT DATA ORGANIZATION

Rapid data ingestion is coupled with a high performance database to provide a centralized, cost effective solution

Collecting >1.4 billion events/month
Providing data insights for over 25 billion pulses



SELF SERVICE DATA ANALYTICS AND INSIGHTS

Non technical end user interactive dashboards support visualization, aggregation, drill down, and download

3,700 active users
Deliver 768 visualizations and analytics

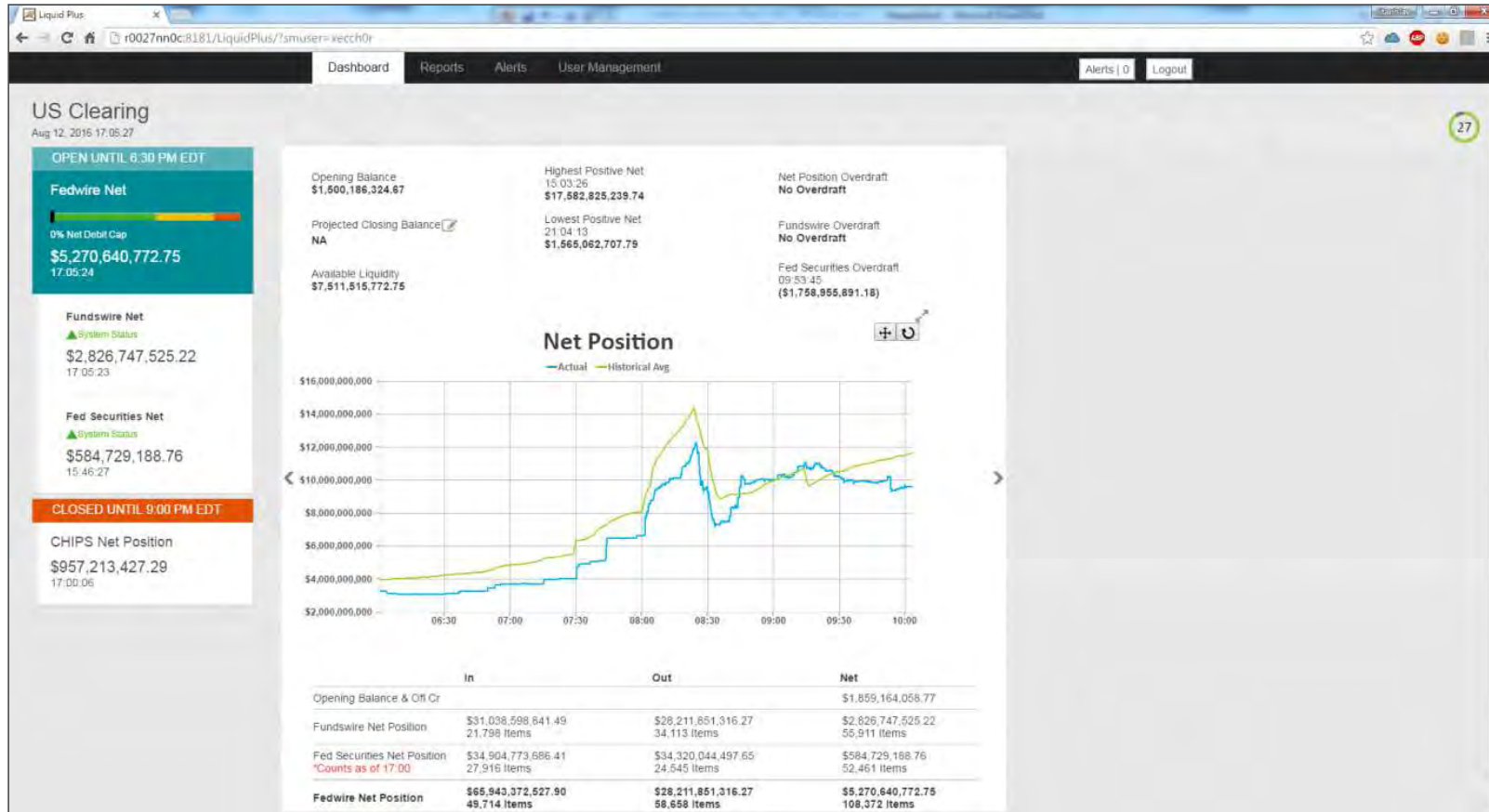


BUSINESS THEMES CAPTURE AND EXTENSION

Metadata layer and reusable dashboard components enable common business themes to be extended across the enterprise

Represent 35 different business areas as well as enterprise-wide insights

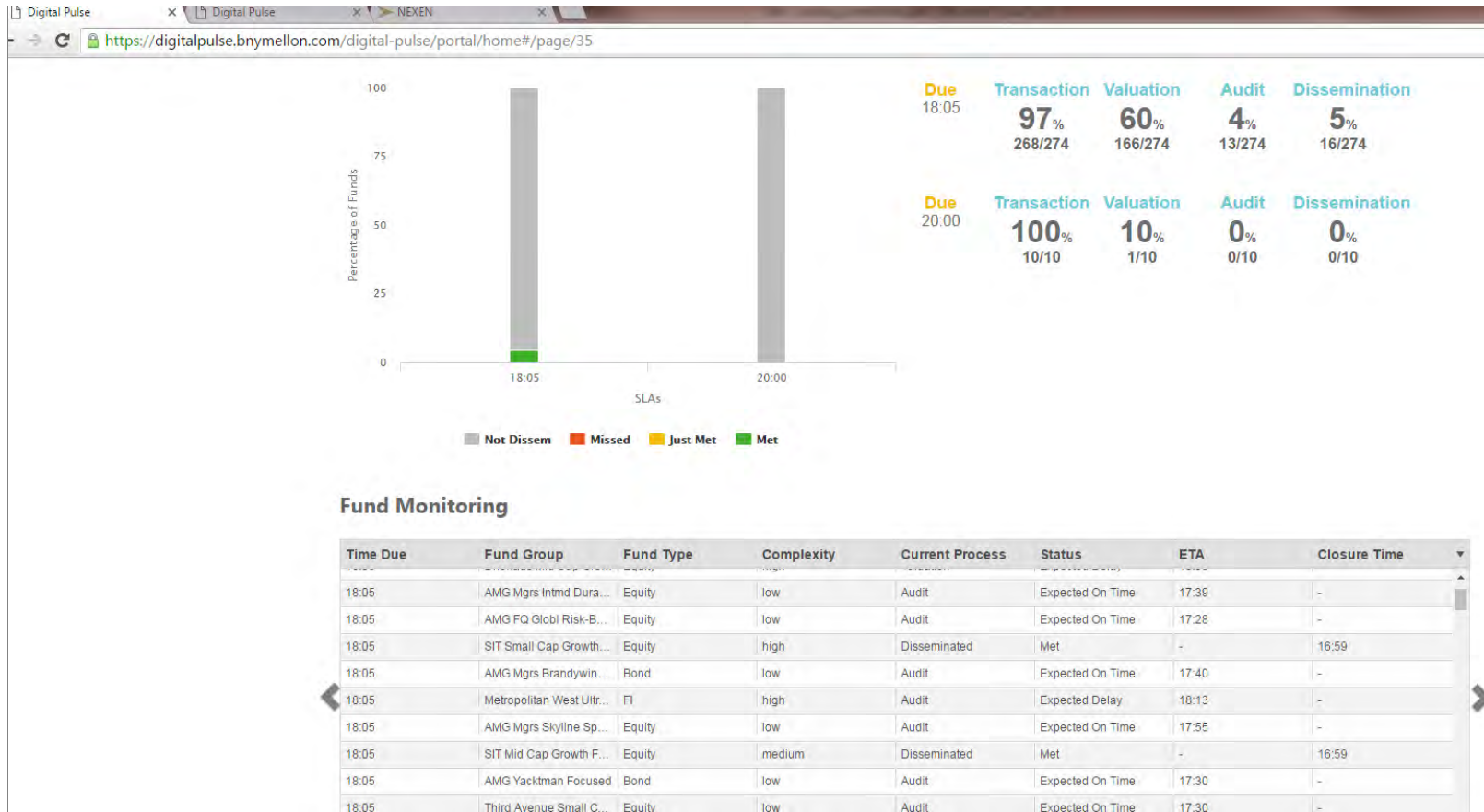
Digital Pulse, Unlocking the Value – Business Example



Liquidity Plus

Real-time liquidity monitoring of Fed Wire, Clearing House Funds, and Fed Securities payments versus market deadlines

Digital Pulse, Unlocking the Value – Business Example



Fund Accounting Valuations

Real-time tracking of daily NAV production activities against client deadlines with projected completion times based on historical trends



NEXEN – Application Programming Interface (API) Store

Matt Joseph

Head of Jersey City Innovation Center

August 24, 2016



Application Programming Interface (API) Store



TECHNOLOGIST

Matt Joseph
Head of Jersey City Innovation Center



BUSINESS CHALLENGE TO SOLVE

- Provide data and functionality to clients that was manually intensive, requiring lengthy customized set-up and numerous touch points



TECHNOLOGY SOLUTION

- Developed APIs that provide access and simplicity for integrating and processing data between client and BNY Mellon



NEXEN BUILDING BLOCK COMPONENT(S)

- BXP; API store

BENEFITS

Efficiency	✓
Cost Savings	✓
Resiliency	✓
Risk Reduction	✓
Revenue Generation Opportunity	✓

Client

- Utilizes industry standards and open source solutions making it easier for clients to extend their technology investments
- Invokes BNY Mellon services directly, improves the speed to access our solutions as well as developer productivity
- Enables the creation of new solutions that combine data and functionality
 - App store, third-party solutions and FinTech APIs

BNY Mellon

- Transforms business operations to be more agile, flexible and dynamic in the new digital economy
- Creates operational efficiencies by making services interoperable
- Increases speed-to-market, accelerates innovation, enables monetization of data and functionality



NEXEN – BNY Mellon eXtreme Platform (BXP) / Cloud Technology

John Wetherill

Principal Architect, Silicon Valley Innovation Center

August 24, 2016



BNY Mellon eXtreme Platform (BXP) – Cloud Technology



TECHNOLOGIST

John Wetherill
Principal Architect, Silicon Valley Innovation Center



BUSINESS CHALLENGE TO SOLVE

- Reduce manual software installations, application-specific maintenance complexities and specialized skills to increase efficiencies and reduce overall costs and risk



TECHNOLOGY SOLUTION

- Created environment that enables consistent application and data portability of software solutions through “containerization” and efficient use of available resources



NEXEN BUILDING BLOCK COMPONENT(S)

- BXP; API store; App store; Digital Pulse; Gateway

BENEFITS

Efficiency	✓
Cost Savings	✓
Resiliency	✓
Risk Reduction	✓

Revenue Generation Opportunity

Client

- Reduces costs and risks
- Increases resiliency
- Reduces time spent on maintenance
- Onboards clients faster
- Improves client experience

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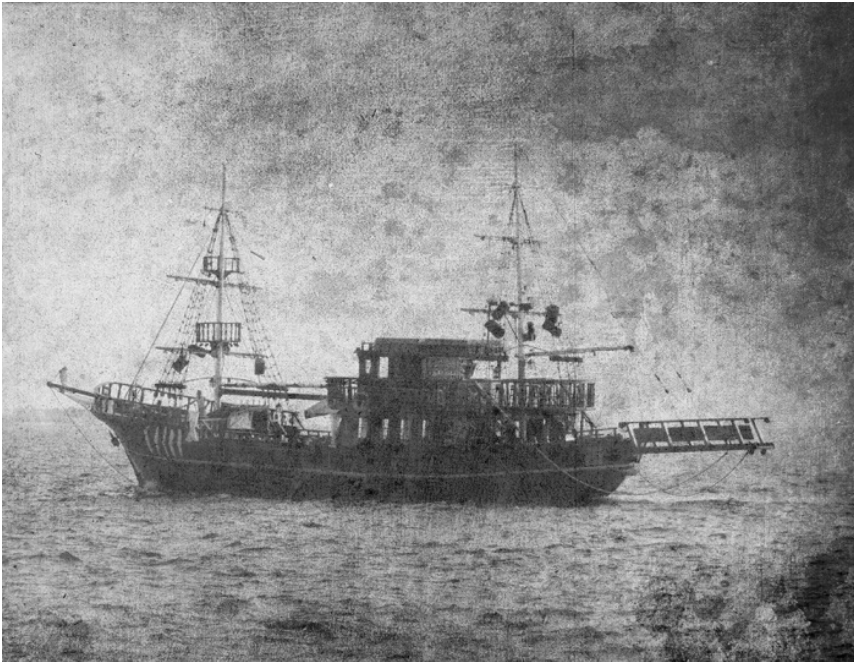
- Supports public / private cloud, pay-on-demand
- Delivers software faster
- Enables higher productivity
- Enables investment in and delivery of value-added solutions to clients

BXP Cloud Technology Powering Investments

- Hosts BNY Mellon business applications
- Hybrid cloud strategy supports private and public cloud
- Significantly improved software delivery times from months to hours to provision application stacks
- 300+ Apps deployed
- Thousands of deployments, billions of transactions per month



Containers Revolutionized Global Commerce

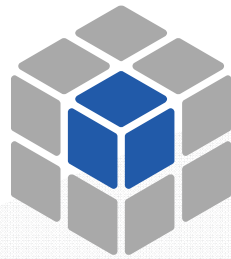


We Now Have Containers for Code

Pack all software in the same way

Transport software efficiently

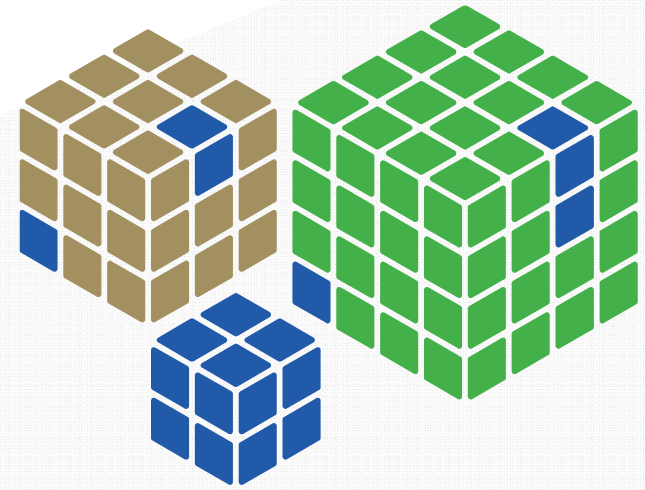
Run software consistently



Break today's software into
smaller pieces



Run more of them
to **scale**



Re-assemble into business **opportunities**

The Journey to Cloud Native



NEXEN Ecosystem – Business Solutions

Mike Keslar

Head of Investment Services Technology

August 24, 2016



BNY MELLON

Building Business Solutions Differently

From How we Build Solutions to How we Work Together, we are Eliminating Redundancies, Increasing Developer Productivity and Improving the Client Experience



NEXEN Components

- Leveraging NEXEN's reusable building blocks to drive lower development costs and faster speed to market



Service Ownership

- Transforming application teams into client-focused service organizations measured on service quality



Agility

- Adopting Agile / Lean development principles and increasing business engagement



Enterprise Services

- Transitioning from business unit solutions to enterprise services that optimize processes across the firm



Resiliency

- Leveraging new approaches to resiliency to ensure that platforms are highly available

Today You Will See Various Demonstrations of How We Are Building Business Solutions Differently, Including...

Demonstration	Business Benefit	Gateway	API Store	App Store	Workflow	Digital Pulse	BXP
Enterprise Risk Integration	<ul style="list-style-type: none"> Improved ability to manage risk Increased visibility and transparency into risk exposures 		✓			✓	✓
Enterprise Client Onboarding	<ul style="list-style-type: none"> Improved and consistent client experience Improved time to revenue recognition 		✓				✓
Trade Capture Analytics	<ul style="list-style-type: none"> Improved straight through processing rates Lower transaction costs 		✓				✓
Sentiment Application	<ul style="list-style-type: none"> Integrating social and conventional media analytics into investment portfolios 						✓
Distributed Ledger for Broker-Dealer Services (BDS)	<ul style="list-style-type: none"> Improved resiliency – potential alternative if primary system is down 		✓*				✓*

* Future



NEXEN Ecosystem – Collaboration

John Lehner

Chief Executive Officer, BNY Mellon Technology Solutions

August 24, 2016



BNY Mellon Technology Solutions Vision

Capitalize on our Technology Expertise and Assets to Achieve Our Goal of Being the Investments Technology Solutions Leader



Rationale

- Greater demand for integrated front and back office
- Need for agile, flexible, scalable IT infrastructure
- Increased focus and investment in data management and analytics
- Stronger focus on managing risk at the enterprise-level



Approach

- Extend our variable cost business model across the investment life cycle
- Unlock value of technology assets and change the value perception of technology from a cost to a revenue driver
- Offer a continuum of deployment options (Saas, PaaS, full outsourcing)
- Leverage NEXEN collaboration solutions, leveraging data and third-party applications
- Build FinTech portfolio through internal development, partnerships, and equity investments



Factors Positioning BNY Mellon for Success

- Clients trust BNY Mellon
- Strong domain knowledge
- Proven track record



Benefits

- Diversify BNY Mellon revenue streams
- Create stronger strategic client relationships
- Improve our technology return on investment

Combining Size and Scale with Data-Centric Solutions

- Our technology and service is comprehensive, flexible, scalable and global
- Integrated middle office platform offering that draws upon our innovative data, operational and technology expertise to service today's multi-layered outsourcing arrangements
- Ability to combine back office functions with middle office servicing across multiple books of business via a single platform



Why Clients are Choosing Us

Lessons learned from other recent large client deals



Data-Centric Solutions

1. Manage data complexity
2. Higher quality and consistency supporting front office and client data challenges
3. Flexibility in addressing changing data requirements



Commercial Impact

1. More efficient than previous operating models
2. Faster time to value and lower risk deployments
3. Best-in-class technology enables competitive price point



Business Benefits

1. Provides a solution that addresses complexity and commodity requirements
2. Reusable and scalable components delivered in client-specific configurations
3. Variable cost structure